UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,023	01/21/2005	Akira Kuramori	ION2.013APC	1949

20995 7590 01/24/2008

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
PANI, JOHN	

ART UNIT	PAPER NUMBER
3736	

NOTIFICATION DATE	DELIVERY MODE
01/24/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
eOAPilot@kmob.com

Office Action Summary	Application No.	Applicant(s)	
	10/522,023	KURAMORI ET AL.	
	Examiner	Art Unit	
	John Pani	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *30 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. Claims 1, 2, and 7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of copending Application No. 10/942,045. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are anticipated by the claims of the copending application. Claims 1, 2, and 7 of the instant application are generic to the species claimed in claim 3 of potentially conflicting copending Application No. 10/942,045.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 5-10, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-230699 to Okamoto et al. (Okamoto) in view of JP2003-177079 to Masaru et al. (Masaru).

4. In reference to Claims 1 and 8

Okamoto (see attached translation) teaches an apparatus and method for evaluating a degree of work comfort ("driving load decision device") by measuring myoelectric potentials during a work activity which is performed antagonistically (steering a vehicle) by a pair of left and right muscles provided in a human body in bilaterally symmetrical relation ("same muscle of left and right arms", see [0006]) comprising: a pair of detection sensors (myoelectric potential sensors **2**, see [0022] and Figs. 1-2) for detecting the myoelectric potentials of the pair of left and right muscles provided in the human body in bilaterally symmetrical relation, the myoelectric potentials produced by actions of the pair of the muscles of the human body ([0022]) during the work activity; a waveform processing unit (the steps of the disclosed method are carried out by a computer, see [0155]) for generating a synchronous contraction waveform of the pair of muscles from time-series waveforms of the pair of myoelectric potentials (see [0035], "Mn" is calculated. Although all examples show competitive values of biceps/triceps, i.e. "muscles for expanding and contracting arm", it is clear from [0022] that the same muscle of two sides of the body can also be used); and an evaluation unit (the steps of the disclosed method are carried out by a computer, see [0155]) for evaluating a level of the degree of comfort of the work activity from intensity information of the generated synchronous contraction waveform (The strength of the signal is compared to a reference value, see [0039]). However, Okamoto does not explicitly state that an amplifier is used to amplify the myoelectric potentials.

Masaru teaches of an apparatus for measuring feeling of steering that detects muscles potential and uses an amplifier (**15L and 15R**) to amplify the electromyogram wave (see [0026] of attached translation).

It would have been obvious to one having ordinary skill in the art at the time of the invention to have included an amplifier as taught by Masaru, in the device taught by Okamoto, so that the weak EMG signal could be amplified.

In reference to Claims 2 and 9

Okamoto in view of Masaru teaches an apparatus and method of claims 1 and 8 (see above), and Okamoto further teaches that the evaluation unit calculates the intensity information of the generated synchronous contraction waveform ([0035]) and evaluates the level of the degree of comfort of the work activity ([0039]) at the specified time interval (the time during which measurements are taken is a "specified time interval") based on results of the calculation.

In reference to Claims 3 and 10

Okamoto in view of Masaru teaches an apparatus and method of claims 1-2 and claims 8-9 (see above), and Okamoto further teaches that the waveform processing unit performs full-wave rectification with respect to the time-series waveforms of the pair of myoelectric signals (uses "absolute values", see [0022]). However, Okamoto does not teach that the smaller of the respective values at the same time of the time-series waveforms of the pair of myoelectric potentials are designated as a signal value of the synchronous contraction waveform.

Masaru teaches that a waveform processing unit performs full-wave rectification with respect to the time series waveform of a pair of myoelectric potentials (see [0040-0045] and drawing 6, all values are greater than zero), and designates that both the larger and smaller of the waveforms are used individually to determine passive or active steering [0045]. This corresponds to designating them as a signal value of the synchronous waveform, as they are used to determine the comfort of the work activity (i.e. passive/active steering).

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the apparatus and method taught by Okamato by using both the larger and smaller of two corresponding waveforms to determine passive or active steering, as taught by Masaru, because it would allow for greater accuracy in determining driver stress, because two inputs would be used to judge the driver's condition (see [0045] of Masaru).

In reference to Claims 5 and 12

Okamoto in view of Masaru teaches an apparatus and method of claims 1-2 and claims 8-9 (see above), and Okamoto further performs full-wave rectification with respect to the time-series waveforms of the pair of myoelectric potentials ("absolute values" [0022]) and designates a geometric mean value of signal values at the same time of the time-series waveforms of the pair of myoelectric potentials as a signal value of the synchronous waveform (the product of myoelectric potentials equates to a geometric mean).

In reference to Claims 6 and 13

Okamoto in view of Masaru teaches an apparatus and method of claims 1-2 and claims 8-9 (see above), and further teach that the work activity comprises steering a wheel in driving a vehicle ("driving load" during driving is measured using myoelectric potentials from the arms).

In reference to claims 7 and 14

Okamoto in view of Masaru teaches an apparatus and method of claims 1-2 and claims 8-9 (see above). Okamoto discloses sensors attached to the biceps and triceps but not the deltoids. Masaru teaches that the deltoids are useful in determining whether a driver is in an "active state" or "passive condition" ([0045]). The active or passive state of the driver would be an indicator of "driving load". It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the invention taught by Okamoto by measuring myoelectric potential from the deltoid muscles, as taught by Masaru to determine whether the driver was in an active or passive state.

5. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Masaru as applied to claims 3 and 10, respectively above, and further in view of "The importance of normalization in the interpretation of surface electromyography: a proof of principle" to Lehman et al. (Lehman).

6. Okamoto in view of Masaru teaches an apparatus and method for evaluating degree of work comfort according to claims 3 and 10 (see above), however neither reference explicitly mentions that the waveform processing unit performs a normalizing

process with respect to the time-series waveforms of the pair of amplified myoelectric potentials by using a maximum myoelectric potential prior to generating the synchronous contraction waveform.

Lehman teaches that EMG recordings are highly variable and depend upon electrode application and placement, perspiration and temperature, muscle fatigue, contraction velocity and muscle length, cross talk from nearby muscles, activity in other synergists and antagonists, etc (pg. 445, second paragraph). Lehman further teaches that it is typical to normalize EMG by the value recorded during a maximum voluntary contraction (pg. 445 first paragraph) to control for variables and allow comparison between subjects or days.

It would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the device and method taught by Okamoto by normalizing the myoelectric potential data using the maximum value in order to control for variables and allow comparision between subjects and days, as taught by Lehman.

Response to Arguments

7. Applicant's arguments filed 10/30/2007 have been fully considered but they are not persuasive. The Examiner respectfully disagrees with the Applicants' contention that Okamoto does not teach generating a synchronous contraction waveform of a pair of left and right muscles provided in the human body in bilaterally symmetrical relation. Please note pg. 13, [0022] of Okamoto describes calculating a competitive value of the same muscle in opposite arms: "sensors 2 are mounted at a cubits side wrist bending

muscle and a radius side wrist expanding muscle of ***both arms***, the myoelectric potentials of the front arms (muscles for bending and expanding the wrist) of ***both arms*** are detected, and ***a competitive value (the product of absolute values of the myoelectric potentials) of the left and right arms*** is calculated based on the myelectric potential of the ***same muscle of the left and right arms (or foots)***" (emphasis added); and proceeds to describe, in an additional or alternate mode of functioning, providing a competitive value of competing muscles of a single arm: "***or*** a competitive value of said both muscles is calculated based on the myoelectric potential of ***a muscle for expanding the arm*** and the myoelectric potential of ***a muscle for contracting the arm***". See also paragraphs [0006] and [0007] which further indicate that the device determines competition values for either the same muscle of opposite limbs ([0006]) or antagonistic muscles of a single limb ([0007]). The described "competition values" are considered "synchronous contraction waveforms", because they are one waveform formed from the individual waveforms of the two muscles. The Applicants' assertion that one of skill in the art would not be motivated to "generate a synchronous contraction waveform...of the arms" is moot, as Okamoto teaches this limitation, as noted above. Masaru was not relied upon by Examiner to teach the above limitation.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pani whose telephone number is 571-270-1996. The examiner can normally be reached on Monday-Friday 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JP 1/17/08